subspecies, and Brühl's figure (t. 126) fits *P. rockii* subsp. *rockii* rather well except for the flower color. The petals of *Paeonia* may change color if specimens are not dried quickly. Haw and Lauener (1990) commented on a specimen, *Gould 132* (K), from Bhutan as "having a large flower with blotched petals. It appears to be closer to [*P. suffruticosa*] subsp *rockii*, but the leaflets are quite frequently lobed, with up to ca. 5 rather blunt, shallow lobes per leaflet." They also considered this plant as a possible escape from cultivation at a lamasery, and their description fits *P. rockii* subsp *rockii* very well. On the basis of these findings, it is rather reasonable to say that "*P. moutan* subsp. *atava*" is actually *P. rockii* subsp. *rockii* introduced to Xigaze, Yadong, and nearby Bhutan by Buddhist monks from lamaseries in the Qinling Range.

## Key to the Species of *Paeonia* in Xizang

1a. Shrubs; flowers yellow, rarely red-purple.
  2a. Carpels 2–4; follicles < 4 × 1.5 cm; petals usually red-blotched at base, rarely red-purple; filaments purple-red; plants < 1.5 m tall; leaf segments and lobes mostly entire . . . . . *P. delavayi*
  2b. Carpels 1, rarely 2; follicles 4.7–7 × 2–3.3 cm; petals pure yellow; filaments yellow; plants usually 1.5–3.5 m tall; leaf segments and lobes with acuminate teeth . . . *P. ludlowii*
1b. Herbs; flowers red, white, or pink.
  3a. All leaflets segmented, with segments again segmented, narrowly lanceolate to lanceolate, 3.5–10 × 0.4–1.7 cm; flowers purple-red . . . . . *P. veitchii*
  3b. Only terminal leaflets 3-segmented, lateral ones not segmented or unequally 2-segmented, narrowly oblong or oblong-lanceolate, 9–13 × 1.2–3 cm; flowers white or rarely pinkish white.
    4a. Carpels densely pubescent; flowers 3 on a stem . . . . . *P. emodi*
    4b. Carpels glabrous; flowers usually solitary . . . . . *P. sterniana*

**Paeonia ludlowii** (Stern & Taylor) Hong, stat. nov. Basionym: *Paeonia lutea* Delavay ex Franchet var. *ludlowii* Stern & Taylor, J. Roy. Hort. Soc. 76: 217. 1951. TYPE: China. SE Tibet [Kongbo Prov., Miling, Tsangpo Valley], *Ludlow, Sherriff & Taylor 4540* (holotype, BM).

Deciduous and caespitose shrubs, up to 3.5 m tall. Roots attenuate downward, not fusiform. Stems gray, up to 4 cm diam. Leaves biternate, glabrous on both sides, green above, pale glaucous beneath; petiole 9–15 cm long; leaflets 9, leaf blade 12–30 × 14–30 cm, lateral 3 leaflets on each side with main petiolules 2–3 cm long, terminal 3 leaflets with main petiolules 5–9 cm long; leaflets nearly sessile, 6–12 × 5–13 cm, usually 3-segmented nearly to base; segments 4–9 × 1.5–4 cm, mostly 3-lobed to middle; lobes 2–5 × 0.5–1.5 cm, entire or with 1 or 2 teeth, segments, lobes, and teeth all acuminate at apex. Flowers 3 or 4 on each shoot, axillary, 10–12 cm across; pedicels slightly curved, 5–9 cm long; bracts 4 or 5 and sepals 3 or 4, grade into one another; petals pure yellow, spreading, obovate, rounded at apex, 5–5.5 × 2.5–3.5 cm; filaments yellow, 1.1–1.5 cm long, anthers ca. 4 mm long; disc only 1 mm high, yellow, dentate; carpels mostly single, very rarely 2, glabrous; stigmas yellow. Follicles cylindrical, 4.7–7 × 2–3.3 cm. Seeds rounded, dark brown, ca. 1.3 cm diam. Flowering late May to early June.

In their description of *Paeonia lutea* var. *ludlowii*, Stern and Taylor (1951, 1953) indicated that the taxon is distinctly different from variety *lutea* and distinguished it by its long, commonly unbranched stems to 8 feet (vs. to 5 feet in var. *lutea*), larger and more open flowers, and up to 2 carpels twice as large as those of variety *lutea*. Upon the examination of plants in five populations in Mailing and Nyingchi counties, as well as five populations of variety *lutea* (= *P. delavayi*), these differences have been confirmed. As shown in Figures 1 and 2, plants of *P. ludlowii* are tall, caespitose, and with larger, pure yellow flowers, yellow filaments, acuminate leaf segments and lobes, and mostly one carpel per flower (more than 97% of the flowers examined have a single carpel and less than 3% have two). Furthermore, *P. ludlowii* produces very large follicles that contain the largest seeds in the genus. In contrast, plants of *P. delavayi* are not caespitose and have much shorter stems, acute leaf lobes and segments, more or less pendulous and smaller flowers on curved pedicels, yellow petals nearly always red-blotched at base, purple-red filaments, and 3 or 4 (rarely 2) much smaller carpels. These differences clearly support the recognition of variety *ludlowii* as a distinct species.

*Paeonia ludlowii* is a narrow endemic of SE Xizang, where it grows in sparse forests, woods, and thickets in Nyingchi, Mailing, and Lhunze counties at 92.4°–94.8°E and 28.4°–29.9°N. All five populations studied were small in size, and the largest was about 200 m in diameter. Except for the Quenima Village population (*Hong et al. H96020*), which had only four individuals, the other populations consisted of rather dense individuals, and the species was a dominant element in the community. Two factors may explain the compact population with a large number of individuals. First, this species has

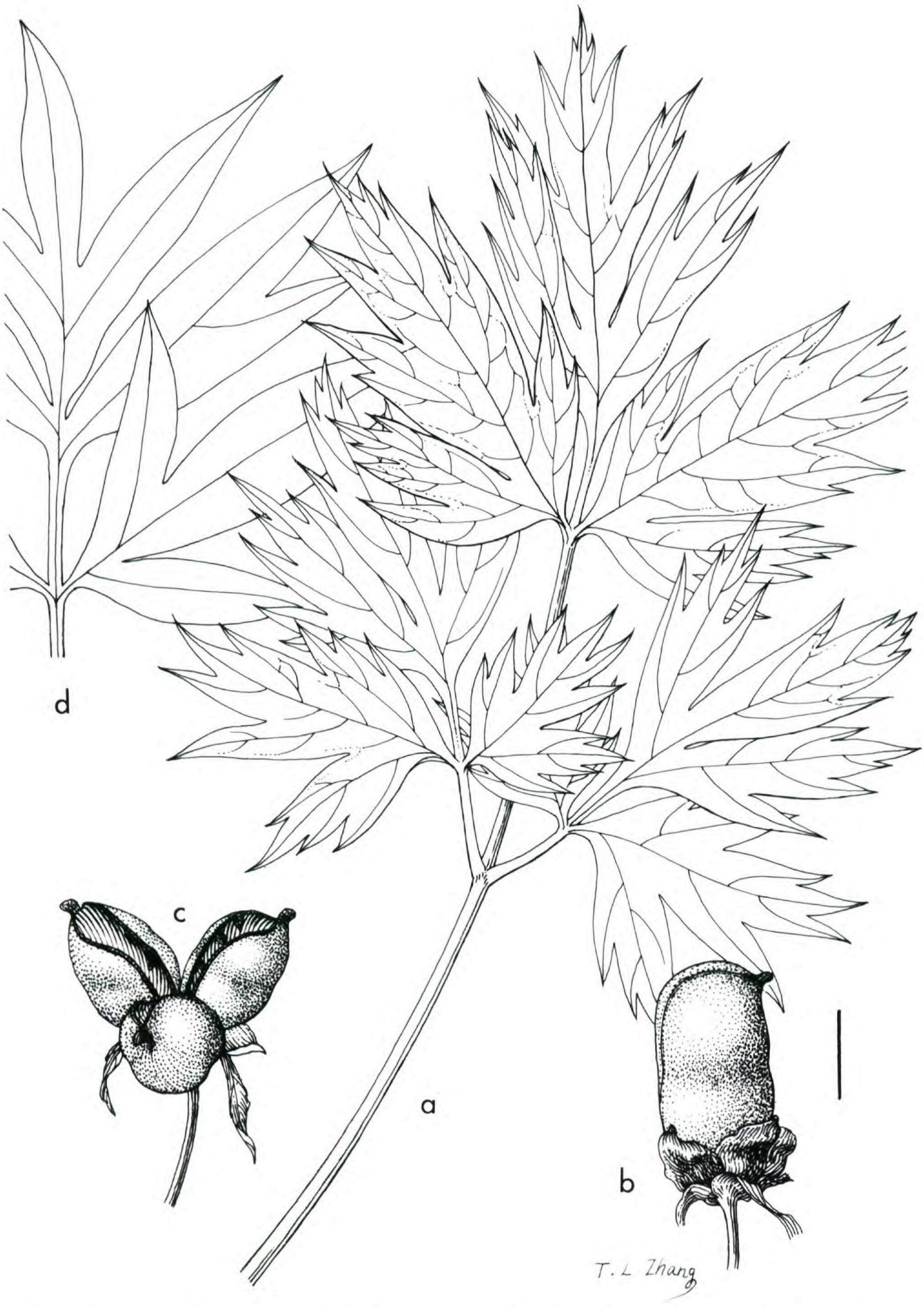


Figure 1. a, b. *Paeonia ludlowii* (Stern & Taylor) Hong. —a. Whole leaf. —b. Fruit of 1 follicle. c, d. *P. delavayi* Franchet. —c. Fruit of 3 follicles. —d. Part of leaf. Scale = 2 cm (drawn by Zhang Tai-li).

a high seed-set, and its seeds appear to have a high germination rate. Nearly 100 seedlings were found in an area of a square meter under a large individual in the Nanyigou population (*Hong et al. H96030*). Second, the seeds of *P. ludlowii* are large (ca. 1.3 cm diam.) and are not adapted to long-distance dispersal; perhaps they are mostly moved by rats. The species is obligately sexual, and no vegetatively produced individuals or plantlets have been found in any of the populations. More than 20